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POLICY AND PRACTICES GOVERNING CUTTING OF FOREST PRODUCTS

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POLICY AND PRACTICES GOVERNING CUTTING OF FOREST PRODUCTS AND THE USE OF BRUSH IN EROSION CONTROL IN REGION 8

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The primary purpose in regulation of cutting of forest products is to provide for useful material in a manner which will leave the forest stands unimpaired in protective effectiveness and in the best possible condition for future production of usable products. Forest areas, when properly managed, furnish cover and soil protection while producing a usable product, but the best interests of conservation are not always served in the removal of living cover for the construction of erosion-control structures.

Good conservation practice consists of proper use of those natural resources which we have, and the cutting of woodland products may therefore be considered as one of our most important jobs. It is also a type of work which, if properly done, requires more supervision and training than most of the construction work for which the product is desired. Fence building is an example, in that fence construction is more simple and more easily learned than the proper selection and production of fence posts from a woodland stand.

While cutting can be generally outlined, each specific set of conditions calls for variations in practice, and considerable personal judgment must be exercised in marking trees to be cut. The marker must appraise the effect removal will have in relation to any given location, keeping in mind that the litter under the trees, as well as the root systems, not only holds the soil in place but increases absorption and penetration of water by the soil. The production of future products is also of major importance in the selection of material.

The policy outlined here is to be used as a guide in cutting operations and in the use of brush in erosion-control work.

Supervision and Organization

On each project, camp or work area where brush or timber cutting is planned, one individual will be appointed to have direct supervision of all cutting of woodland products. This individual will have super-

vision of and be held responsible for all cutting, and his duties will be so adjusted that ample time is available for proper supervision of woods crews. The Area Forester will be responsible to the Regional Division of Forestry for the application of approved practices for forestry work and will train those individuals in immediate charge of all cutting and the use of brush in erosion control.

To allow for proper supervision of work forces, a crew, directed by a foreman or a leader, should, for efficient work, not exceed 15 men. It is the Area Forester's responsibility to arrange, within the limitations with which he is confronted, for crews of proper size supervised by well trained personnel.

It may or may not be necessary to mark material for removal. It is the Area Forester's responsibility to determine, based on instructions appearing later in this bulletin, the need for marking. In the event marking is necessary, the foreman supervising the woods crew will mark the trees or material to be cut or, if given permission by the Area Forester or his designated representative, leaders may be given marking responsibility or members of the crew may assist in the marking. When marking is not necessary, provision should be made to train crews in the procedure decided upon.

Marking may be done with an axe or hatchet. The cheapest and most effective method for marking large numbers of trees as brushy as the various species of juniper, is to use a spray gun with paint as the marking material. For details as to equipment and use, refer to an article entitled "A Practical Tree Marking Instrument," which appears on Pages 305-307 of the Journal of Forestry, Vol. 35, No. 3.

The Area Forester is responsible for necessary recommendations and action to obtain the proper tools for woods work. He is further responsible for making arrangements for training foremen and work forces in the proper care and use of equipment used in woods work.

Trees not marked for cutting must not be blazed or scarred by members of the cutting crew. All woods operations should be conducted in a manner that will be a credit to our organization and serve as a demonstration of proper practice for our cooperators to follow.

Fire Protection

Smoking while working in the woods should not be permitted during the fire season. Smoking periods may be allowed at designated places, free from inflammable material. Each woods crew should have available sufficient equipment for fire suppression needs.

Cutting Areas

All types of cutting will be on areas previously approved by the forester in charge or by the technician assigned the responsibility for forestry work for that area unit, if so authorized by the Area Forester.

All cutting of forest products will be confined to cooperators' property or to lands on which written permission to cut designated products has been secured. This permission may be in the form of a letter, or a permit on a standard form, if covering public domain, National Forest, or other public land.

Utilization

The need for various products on the whole project should be known prior to cutting, so that all types of material can be cut at one operation insofar as a given area will supply such products under proper and conservative cutting. When cutting post, stay and spreader post material can often be cut from the same tree. Not only better utilization is accomplished, but material is produced at less cost. Large trees will be split when post or other products can be secured. Juniper trees should not be cut below the size required to produce line posts, with the exception that material that must be removed to allow cutting of posts might provide stays or spreader posts.

For small material, the stump height should not exceed the diameter of the tree. Larger trees should be cut as low as possible, preferably not over ten inches from the ground on the upper side. In the case of juniper, higher stumps will be permissible to allow for leaving suitable live limbs below the stump cut. Stay material should be worked up when needed from trees cut for other purposes so that utilization of cut material will be as complete as possible.

Brush resulting from cutting operations made primarily for securing other products will be utilized for erosion-control purposes, wherever feasible. In the use of this brush, first preference will be given to the immediate area from which it was cut. On eroding sites and in some classes of timber, brush used on the ground may furnish protection comparable to that originally furnished by the living tree before removal. Live brush placed with the tops against the direction of flow in small incipient washes will hold a lot of soil. Sheet erosion on bare spots may be controlled by use of brush from cutting operations. If no erosion exists on the cutting area, the brush may be used for erosion control on nearby areas, or if none are within feasible hauling distance it should be lopped and scattered away from reproduction on areas of low plant density and left so that it lies within 12 inches of the ground.

Small branches that will lay close to the ground are best suited for erosion-control purposes. This means that large branches should be trimmed to get suitable material.

Instructions Covering the Use of Brush for Simple Structures

Forestry personnel are now responsible for preparation of work orders and techniques for the use of brush in simple structures requiring no engineering design. Obviously there are many places where brush can be used to advantage. On large grants the sum total of these places may require the use of large quantities of brush which would result in excessive control costs. Based on existing conditions, each Area Forester will for an individually owned unit decide which are the most important localities to use brush in simple structures. Protection of other SCS work is an important consideration. Application may be to watersheds above stock tanks, for protection of roads, to reclaim small gullies in farm lands, or for other purposes.

Brush has several characteristics which govern its proper use. Full effectiveness is temporary, although partial effectiveness, especially in the case of juniper, may continue for a long time after the needles have dropped. Brush is light in weight and makes a permeable construction material. If properly used, considerable silt is deposited and greater soil moisture penetration obtained due to its effect in slowing down runoff and retarding evaporation. The relationship of brush to vegetative growth of grasses is extremely important since the density of brush cover may either be adverse or beneficial. And brush should always be used to assist in the establishment of a grass cover.

Locations where brush should be used are: (1) small, incipient washes in which some grass cover exists, where through the use of brush, this remaining grass cover can be afforded protection from livestock and supplied additional moisture; (2) if no incipient washes are present, brush can be scattered on areas of low plant density to assist in stopping sheet erosion and to prevent the formation of incipient washes; (3) for areas where no grass cover exists, use brush in connection with seeding of grass species; (4) in small washes; (5) in low headcuts.

Application of the use of brush under the first three conditions noted above should be light and should be placed in single layers at intervals. It may be necessary to weight brush with rock if there is danger of its being removed by water. In any event there should be no overfall.

In the use of brush in small washes where planting of willows can later be made, allowing for ultimate stabilization, rock will usually be required to hold the brush in place. As a general practice, make brush and rock plugs 1' or less in height in the center or low

point, sloping the downstream portion of the plug so that there is no overfall. Bank the sides high, sloping to the center. Low brush and rock plugs should be used on soils of low erodibility.

There may be situations where low headcuts up to 3' in height may be stabilized by the use of brush. For the present, this practice should be tried out on a test basis on soils of low erodibility. Various methods may be tried, but in all instances simple structures or other control proposals will avoid overfall. One method might be as follows: a short distance downstream from the headcut, the distance depending upon the height of headcuts and other conditions, a brush plug of varying height weighted with rock, well tied into the banks with a light slope from either side to the center of the structure, should be placed. The downstream portion of the plug should be sloped so there is no overfall, leaving a silt catchment basin above.

Reference is made to J. W. Doppa's article in the October, 1939 issue of "Soil Conservation." This article, entitled "Cutting and Use of Brush in Erosion Control," presents the reasons for using brush and the manner in which brush should be used to get the results desired.

General Considerations on Type of Material to Cut

In general, the aim in harvesting material from forest stands consists of cutting those trees or portions of trees which have a utilization value and whose removal will be beneficial from the standpoint of forest production and unharmful from a soil-protection standpoint.

For practically all species, dead, overmature and diseased trees will be removed first, leaving the younger, thrifty, growing stock for future production and site protection. Often those older trees, which may be growing at a very slow rate themselves, are suppressing young trees, and their removal may be beneficial from the standpoint of the stand. The removal of badly diseased trees is also desirable as they are a continual source of infection. From a utilization standpoint, dead timber, if usable, should be given prior consideration, and in open stands dead or dying trees may be all that can be spared.

In cutting younger classes of trees, removal is permissible for the purpose of increased quantity or quality production, as long as adequate cover for soil and moisture conservation is maintained. This type of cutting usually constitutes a thinning or pruning, and usable products may thus be harvested and the stand improved by the operation.

The following types of green material may be cut in accordance with the cutting policy outlined for each species:

1. Old timber plainly decadent.
2. Mature live trees or limbs on a selection cut basis.
3. Young timber on a thinning or stand improvement basis.

In cutting forest products the type and amount of material which can be removed varies with the type of vegetation, slope, soil, and erosion conditions, and, as various combinations of the factors involved will be encountered in the field, it is not practical to give detailed instructions covering every possible situation, and individual judgment must be relied upon in the application of cutting rules. In general, the policy is to be conservative on those areas having the least cover.

SPECIES CONSIDERATIONS

Juniperus monosperma and Juniperus utahensis (One-seed and Utah juniper)

These two species have similar growth habits and may be either single-stemmed trees or quite bushy with several stems. The products desired may be fence posts, stays, spreader posts or brush.

Dead and decadent timber will be considered first in cutting for fence material.

Thrifty trees may be removed from clumps, or large limbs may be removed, leaving part of the tree. The objective in selection will be to leave adequate cover of the most thrifty type of tree found on the area. Good seed-bearing trees should not be removed from open stands unless reproduction is adequate for production of a good stand. Where reproduction is established, however, cutting the older trees may benefit the younger growing stock.

Young trees and thrifty older trees should not be cut from steep, eroding slopes or open stands. Where this type of timber can be removed from clumps and dense stands, without material reduction in protective cover, it may be cut on a thinning or stand improvement basis.

Old, decadent trees may be cut on areas having active erosion if the brush from the cutting is utilized to stabilize the soil on the cutting area and proper grazing use will obtain. In the absence of control of grazing, such trees should not be removed.

When removing limbs care must be taken not to split or peel the trunk of the tree. Never leave a stub when removing limbs; make the cut flush with the main stem.

These two species furnish high quality brush for erosion-control purposes. On level or nearly level areas with good ground cover, a stand of scattered juniper may have but little protective effect. Under such conditions brush can be removed, leaving selected stems for future production. When the stems to be left have live limbs covering less than 50% of the stem length, leave in addition to these selected stems three or four branches carrying heavier foliage.

For conditions covering level or sloping land with lack of adequate ground cover, and where the protective influence of tree cover is a factor of importance in preventing soil erosion, leave all basal branches. The method of concealed cutting will in all instances apply. Branches may be removed from the interior of trees, basing the degree of branch removal on the protective requirements of the location. Stems that in the future will make posts should not be removed.

Juniperus scopulorum (Rocky Mountain Red Cedar)

The growth habit of red cedar varies in form from trees with single stems to those which are quite bushy. The former condition is most common.

Branches of this species will live and continue to grow if left below the cut. The development of the branches left may occur in one of two ways:

1. If the branch or branches left have a relatively vertical position they will straighten to some extent and increase in growth.

2. If the branch or branches left are about horizontal in position and have small limbs on their upper surfaces near the stump, some of these small limbs will accelerate in growth and may later produce desirable products.

In cutting, dead and old, decadent trees will be given first preference. Large trees overtopping reproduction should be marked for cutting. For trees large enough for line posts but not crowding or suppressing reproduction, leave, if possible, at least two branches below the cut if the branches exhibit conditions noted above. In some cases, more branches may be left if present, the number depending upon the size of the stump. Many of the larger, single-stem trees will have no basal branches. On multiple-stem trees, two or more good stems may be left. In all cases, vertical branches should be left in preference to horizontal branches.

No trees should be cut below the size required to produce line posts. Young, fast-growing trees should not be cut for posts even if large enough, unless the durable heartwood meets post size specifications. Large trees should be split to produce the maximum number of usable posts.

This species will not ordinarily furnish brush, except in the case of stand improvement, and then only on a conservative basis.

Gambel Oak

Gambel oak, or related species, may be cut for post and stay material. For fence post use, a minimum top diameter of three inches

is usually required for standard line posts. In addition, the post must be sound or free from rot and placed in the ground with the bark intact within two weeks after cutting or before the post has a chance to dry. For stays, green material can be procured on a stand improvement basis, leaving good, straight stems for future post production.

Cutting with saws is desirable, and a stump height of 2 to 4 inches, depending on the size of the stem, is good practice. Brush from post and stay cutting must be properly disposed of, and if brush is desired for erosion-control structures, it should be procured from trees of poor form, leaving the better stems for future growth of usable products.

In all instances, it is important to consider the protective needs of the site in the removal of material for usable wood products or brush.

Old trees may be cut for brush which are of poor form and have little or no usable wood products, provided they are interfering with existing reproduction and their removal will occasion no openings of sufficient size to markedly lower the protective value of the site.

Juniperus pachyphloea (Alligator juniper)

This species produces good fence posts and is commonly used for wood products and for brush for erosion-control structures. It grows to large size, and the mature trees often produce quantities of brush. The larger trees should be removed and split for posts. Selection of trees should be made where advance reproduction of the same or other species can be released, where adequate cover for soil protection needs is at hand. No trees should be cut below the size required to produce line posts.

Brush should not be obtained from young trees less than six inches D.B.H., except on stand improvement basis. Brush may be obtained from old, rough trees having little or no wood products, where their removal will release reproduction present and still allow for proper conservation of the soil.

On level or nearly level areas with good ground cover, brush can be removed, leaving scattered trees for future production.

For conditions covering level or sloping land with lack of adequate ground cover, and where the protective influence of tree cover is a factor of importance in preventing soil erosion, leave all basal branches. The method of concealed cutting will in all instances apply to this type of area. Branches may be removed from the interior of trees, basing

the degree of branch removal on the protective requirements of the location. Twenty percent of the crown should be considered a maximum in pruning.

Pinus edulis (Pinon pine)

Pinon pine is not desirable for fence posts so has been used but little in field operations. However, considerable quantities of branch material have been obtained for erosion-control structures. Due to the liability of insect infestation by Ips as a result of cutting, certain precautions must be taken when brush is obtained through the removal of entire trees or of branches exceeding 4 inches in diameter.

Some stand conditions allow the removal of small branches, not exceeding 3" in diameter, by the concealed method of cutting or in the case of young open-grown trees, removal of branches from the main trunk. Not over 20% of the crown will be removed. Branches should not be removed from trees 5" D.B.H. and smaller. On level or nearly level areas with good ground cover, the first two or three whorls of basal branches may be removed. For conditions covering level or sloping land with lack of adequate ground cover and where the protective influence of the cover is a factor of importance in preventing soil erosion, all basal branches should be left. A limited number of branches can be removed by selecting a few above those left at the base of the tree to hold the litter in place.

Entire trees will be cut to obtain brush when this product must be obtained from overmature trees which do not lend themselves to the brush procurement methods previously noted. Advantage should be taken through removal of old trees to release advance reproduction of the same or better species. Cutting of overmature trees to obtain brush will ordinarily be limited unless the stem and larger branches are needed for erosion-control work, fuel or other useful purposes by the Soil Conservation Service, or wood material may be removed by the local population or the cooperator.

Where no immediate use is apparent for the portions of stems and branches over 4" in diameter, they will be strip peeled. Strips of bark not wider than 2" are left extending from the top to the butt of the stick. These strips are attacked by Ips beetles. But a small percent of the new broods mature since material so treated dries out quickly.

Present Forest Service policy in Arizona and New Mexico varies from the statement on methods of procurement of pinon brush previously noted. When working on National Forests in these two states, it will be necessary to follow instructions issued by the local Forest Ranger.